UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/039,163	12/31/2001	Christopher D. Voltz	H052617.1151US0	9385

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Intellectual Property Administration
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EXAMINER
CUNNINGHAM, GREGORY F

ART UNIT	PAPER NUMBER
2676	

DATE MAILED: 07/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *13 September 2004*.

2a) ☐ This action is **FINAL.**   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1,2,4-20 and 22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1,2,4-20 and 22* is/are rejected.

7) ☒ Claim(s) *19* is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on *31 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All   b)☐ Some * c)☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1.   This action is responsive to communications received 9/13/2004.

2.   The disposition of the claims is as follows: claims 1, 2, 4-20 and 22 are pending in the

application. Claims 1, 11, 16 and 20 are independent claims. Claims 3 and 21 have been

cancelled.

Claim Objections

3.   Claim 19 is objected to under 37 CFR 1.75(c), as being of improper dependent form for

failing to further limit the subject matter of a previous claim. Applicant is required to cancel the

claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the

claim(s) in independent form. Claim 19 is identical to dependent claim 18.

Claim Rejections - 35 USC § 112

4.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the
> subject matter which the applicant regards as his invention.

Claims 1 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete

for omitting essential steps, such omission amounting to a gap between the steps. See MPEP

§ 2172.01. The omitted steps are:

A.   measuring the plurality of output analog voltages in terms of digital values or

converting the plurality of output analog voltages to digital values; and

B.   then comparing the output digital values with the input digital values to determine

a plurality of digital characteristic values.

(Examiner's note: For characterization to be assessed, output/input equations are carried

out in the same domain usually one of Z-domain (z), S-domain (s), time domain (t) or frequency

domain (w).

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6.   Claims 1, 4, 6, 7, 11, 13, 16 and 17 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Kim (US Patent 6,034,665), further in view of TIP570 User Manual,

hereinafter TIP570, further in view of Ota (Japanese Patent JP409246969A), and further in view

of Wynne, (US Patent 5,517,191).

A.   Claim 1, "A method of characterizing a plurality of digital-to-analog converters for a

plurality of color channels of a video subsystem of a computer system, the method comprising

the steps of:

driving the plurality of digital-to-analog converters with a set of predetermined input

digital values;

measuring a plurality of output analog voltages of the plurality of digital-to-analog

converters in response to the driving step; and

storing a plurality of digital characterization values corresponding to the plurality of

output analog voltages in a non-volatile memory associated with the video subsystem such that

the digital characterization values are permanently stored in the non-volatile memory" is

disclosed by TIP570 [on page 5: Each TIP570 is calibrated at factory. Calibration data is stored

in the EEPROM unique to each IP; page 7: The second 64 byte page stores ADC and DAC

calibration and correction values; page 8: DAC offset and gain error; page 32: 8.1 Data

Correction, and page 33 at 8.3 DAC Data Correction].

TIP570 implies "driving the plurality of digital-to-analog converters with a set of

predetermined input digital values" wherein [each TIP570 is calibrated at factory].

Both Ota [in Problem to be Solved and Solution] and Wynne [in col. 2, ln. 54 – col. 3, ln.

42] teach "driving the plurality of digital-to-analog converters with a set of predetermined input

digital values.

Measuring a plurality of output analog voltages of the plurality of digital-to-analog

converters in response to the driving step is disclosed in [TIP570 – wherein DAC calibration and

correction values stored in EEPROM implies measurement of DAC output analog voltages in

response to driving step]".

However, TIP570, Ota and Wynne do not disclose wherein the application is for "a

plurality of color channels of a video subsystem of a computer system" and although it is not

necessary to demonstrate this prior art since "a plurality of color channels" lacks patentable

weight for this claim, even still Kim does teach this [in abstract and col. 4, lns. 16-30].

Therefore it would have been obvious to one of ordinary skill in the art at the time the

invention was made to apply the 8 channel 12 Bit DAC with EEPROM stored data calibration

and correction disclosed by TIP570 in combination with applied DAC input and output data

disclosed by Ota and Wynne, coupled with a method of adjusting color of a video display

disclosed by Kim, and motivated to combine the teachings because it would require less memory

capacity as revealed by Ota in problem to be solved.

B.   Claim 4, "The method of claim 1, the storing step comprising the step of: storing a set of

digital characterization values for each digital-to-analog converter of the plurality of digital-to-

analog converters" is disclosed supra for claim 1, particularly by TIP570 in [page 5 – Each

TIP570 is calibrated at factory. Calibration data is stored in the EEPROM unique to each IP;

page 7 – The second 64 byte page stores the ADC and DAC calibration and correction values;

page 8 – Figure 3-2].

C.   Claim 6, "The method of claim 1, wherein the set of predetermined input digital values

comprises a plurality of input digital values for each digital-to-analog converter of the plurality

of digital-to-analog converters" is disclosed supra for claim 1 and particularly implied by TIP570

in Figure 3-2 with Offset and Gain Errors for DAC1 through DAC8.

D.   Claim 7, "The method of claim 1, wherein the plurality of digital characterization values

comprise a plurality of digital representations of the plurality of analog output voltages" is

disclosed supra for claim 1 and particularly by TIP570 in Figure 3-2 with Offset and Gain Errors

for DAC1 through DAC8.

E.   Per independent claims 11 and 16, these are directed to a system for performing the

method of independent claim 1, and therefore are rejected to independent claim 1.

F.   Claim 13, "The computer system of claim 11, wherein the plurality of digital

characterization values comprise a plurality of digital representations for a plurality of analog

output voltages measured for the plurality of digital-to-analog converters by driving the plurality

of digital-to-analog converters with a set of predetermined input digital values" is disclosed

supra for claim 1, wherein the TIP570 imply calibration DAC correction gain error values

correspond to the ration of output to input values.

G.   Per dependent claim 17, this is directed to a system for the system of dependent claim 13,

and therefore is rejected to dependent claim 13.

7.   Claims 2, 5 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim

(US Patent 6,034,665), further in view of TIP570 User Manual, hereinafter TIP570, further in

view of Ota (Japanese Patent JP409246969A), and further in view of Wynne, (US Patent

5,517,191), as applied to claim 1 above, and further in view of Dingwall et al., (EP Patent

Number 0780986A2), hereinafter Dingwall.

A.   Claim 2, "The method of claim 1, wherein the set of predetermined input digital values

comprises only a maximum input digital value for the plurality of digital-to-analog converters" is

disclosed by Kim, TIP570, Ota, and Wynne supra for claim 1. However they do not appear to

disclose "wherein the set of predetermined input digital values comprises only a maximum input

digital value for the plurality of digital-to-analog converters", but Dingwall does in abstract at [In

an error sampling interval of the D/A converter, the output signal of the D/A converter developed

when the data to be converted is at **full scale** is compared in a comparator (131) with a reference

voltage (VREF). An error signal (ERROR) is sampled and is used for varying a control voltage

(VCP2) developed in a capacitor. The control voltage controls the current sources (120) of the

D/A converter in a current mirror manner. The reference voltage is coupled in common to each

of the comparators of the D/A converters. In this way, matching among the D/A converters and

the accuracy of each are enhanced.] Wherein [full scale] corresponds to "maximum input digital value".

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply DAC for a plurality of color channels of a video system disclosed by Kim, TIP570, Ota, and Wynne in combination with maximum input digital value disclosed by Dingwall, and motivated to combine the teachings because it would provide automatic calibration digital to analog converter for a video display as revealed in abstract by Dingwall.

B.   Claim 5, "The method of claim 4, wherein the set of digital characterization values comprises only a single digital characterization value for each digital-to-analog converter" is disclosed supra for claim 4. Wherein single value represents "full scale" value.

C.   Per dependent claim 14, this is directed to a system for performing the method of dependent claim 5, and therefore is rejected to dependent claim 5.

8.   Claims 9, 10, 12, 15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (US Patent 6,034,665), further in view of TIP570 User Manual, hereinafter TIP570, further in view of Ota (Japanese Patent JP409246969A), and further in view of Wynne, (US Patent 5,517,191), as applied to claim 1 above, and further in view of Dingwall et al., (EP Patent Number 0780986A2).

A.   Claim 9, "The method of claim 1, wherein the measuring step is performed with a precision termination load resistor" is disclosed by Kim, TIP570, Ota, and Wynne supra for claim 1. However Kim, TIP570, Ota, and Wynne do not appear to disclose "wherein the measuring step is performed with a precision termination load resistor", but Thomson does in

col. 2, lns. 10-13. Although "greater than, for example 1%" is given, this is still relatively less than 10% or 20% resistor tolerances.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply "plurality of DAC's for a plurality of color channels of a video system" disclosed by Kim, TIP570, Ota, and Wynne in combination with 1% resistor tolerance disclosed by Thomson, and motivated to combine the teachings because it would provide automatic calibration digital to analog converter for a video display as revealed in abstract by Thomson.

B.   Claim 10, "The method of claim 1, wherein the plurality of digital characterization values represents a plurality of transfer functions for the plurality of digital-to-analog converters" is disclosed by Kim, TIP570, Ota, and Wynne supra for claim 1. However Kim, TIP570, Ota, and Wynne do not appear to disclose "wherein the plurality of digital characterization values represents a plurality of transfer functions for the plurality of digital-to-analog converters", but Thomson does in col. 2, lns. 17-56. Wherein transfer function describes input – output relationships.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply "plurality of DAC's for a plurality of color channels of a video system" disclosed by Kim, TIP570, Ota, and Wynne in combination with mathematical model disclosed by Thomson, and motivated to combine the teachings because it would provide automatic calibration digital to analog converter for a video display as revealed in abstract by Thomson.   .

C.   Per dependent claim 12, this is directed to a system for performing the method of dependent claim 10, and therefore is rejected to dependent claim 10.

D.   Claim 15, "The computer system of claim 11, further comprising: color management software executable by the processor to perform color correction based on the plurality of digital characterization values " is disclosed supra for claim 11 and by Wynne in col. 1, ln. 57 – col. 2, ln. 15 and lns. 43-53. wherein color correction corresponds to color management.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply output/input relationships disclosed by Dingwall in combination with the color correction system disclosed by Wynne, and motivated to combine the teachings because it would be just as applicable for Wynne since he employs a plurality of DACs as revealed by Wynne in abstract.

E.   Per dependent claim 18, this is directed to a system for performing the method of dependent claim 10, and therefore is rejected to dependent claim 10.

9.   Claims 8, 20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (US Patent 6,034,665), further in view of TIP570 User Manual, hereinafter TIP570, further in view of Ota (Japanese Patent JP409246969A), further in view of Wynne, (US Patent 5,517,191), further in view of State of the Art Digital Control (CIGRE Task Force 38.02.17 Advanced Angle Stability Controls Final Report: Dec 1999), hereinafter CIGRE.

A.   Claim 20, "A method of characterizing a plurality of color channels of a video subsystem of a computer system, the method comprising the steps of:

driving the plurality of color channels with a set of predetermined input digital values;

measuring a plurality of output analog signals of the plurality of color channels in

response to the driving step; and

storing a plurality of digital characterization values corresponding to the plurality of output

analog signals in a non-volatile memory of the video subsystem such that the digital

characterization values are permanently stored in the non-volatile memory" is disclosed supra for

claim 1.

Although claim 1 is directed toward a method for characterizing a plurality of DAC's for

a plurality of color channels of a video system, CIGRE discloses, for claim 20, a generic digitally

controlled dynamic system with the various state equations and parameters from system input to

system output along with system equation on pages 3-3 to 3-7; see Fig. 3-1 and page 3-14 at

[Digital hardware able to run code resident on EPROM or flash-EPROM and to store operative

parameters on EEPROM is employed]. Wherein [operative parameters on EEPROM]

corresponds to "digital characterization values corresponding to the plurality of output analog

signal voltages"

However, TIP570, Ota, Wynne and CIGRE do not disclose wherein the application is for

"a plurality of color channels of a video subsystem of a computer system", but Kim does [in

abstract and col. 4, lns. 16-30].

Therefore it would have been obvious to one of ordinary skill in the art at the time the

invention was made to apply the 8 channel 12 Bit DAC with EEPROM stored data calibration

and correction disclosed by TIP570 in combination with applied DAC input and output data

disclosed by Ota and Wynne, coupled with a method of adjusting color of a video display

disclosed by Kim, along with the input-output computer controlled system disclosed by CIGRE

and motivated to combine the teachings because it would require less memory capacity as revealed by Ota in problem to be solved and cover any generic process as disclosed by CIGRE.

B.　　　Claim 22, "The method of claim 20, wherein the video system comprises a graphics controller" is disclosed supra for claim 20, particularly via Wynne in col. 6, lns. 54-61.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the 8 channel 12 Bit DAC with EEPROM stored data calibration and correction disclosed by TIP570 in combination with applied DAC input and output data disclosed by Ota and Wynne, coupled with a method of adjusting color of a video display disclosed by Kim, along with the input-output computer controlled system disclosed by CIGRE and graphics controller disclose by Wynne and motivated to combine the teachings because it would require less memory capacity as revealed by Ota in problem to be solved and cover any generic process as disclosed by CIGRE.

C.　　　Claim 8, "The method of claim 1, wherein the plurality of digital characterization values comprise a plurality of digital values corresponding to a mathematical model for the plurality of analog output voltages" is disclosed supra for claim 1 by Kim, TIP570, Ota and Wynne.

However they do not appear to disclose ", wherein the plurality of digital characterization values comprise a plurality of digital values corresponding to a mathematical model for the plurality of analog output voltages", but CIGRE does on pages 3-4 to 3-8; see Fig. 3-1.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the 8 channel 12 Bit DAC with EEPROM stored data calibration and correction disclosed by TIP570 in combination with applied DAC input and output data disclosed by Ota and Wynne, coupled with a method of adjusting color of a video display

disclosed by Kim, along with a mathematical modeled system disclosed by CIGRE and graphics

controller disclose by Wynne and motivated to combine the teachings because it would require

less memory capacity as revealed by Ota in problem to be solved and cover any generic process

as disclosed by CIGRE.

Responses

10.   Responses to this action should be mailed to: Commissioner of Patents and Trademarks,

Washington, D.C. 20231.

Inquiries

11.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Gregory F. Cunningham whose telephone number is (571) 272-

7784.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Matthew Bella can be reached on (571) 272-7778. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

On July 15, 2005, the Central FAX Number will change to **571-273-8300**. This new

Central FAX Number is the result of relocating the Central FAX server to the Office's

Alexandria, Virginia campus.

Most facsimile-transmitted patent application related correspondence is required to be

sent to the Central FAX Number. To give customers time to adjust to the new Central FAX

Number, faxes sent to the old number (703-872-9306) will be routed to the new number until

September 15, 2005. After September 15, 2005, the old number will no longer be in service and

571-273-8300 will be the only facsimile number recognized for "centralized delivery".
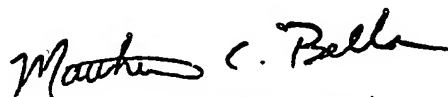
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system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

J.F.Cunningham

Gregory F. Cunningham
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7/13/2005

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